Source Water Assessment Program (SWAP) Report For New England Primate Research Center

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

? Inventory land uses within the recharge areas of all public water supply sources;

? Assess the susceptibility of drinking water sources to contamination from these land uses; and

? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared: January 26, 2001

Table 1: Public Water System (PWS) Information

PWS NAME	N.E. Primate Research Ctr. C/O Harvard Med. School
PWS Address	1 Pine Hill Drive
City/Town	Southboro, MA
PWS ID Number	2277001
Local Contact	Thomas Burril
Phone Number	(508)624-8055

Well Name	***Source ID#***	***Zone I (in feet)***	***IWPA (in feet)***	***Source Susceptibility***
Well #1	2277001-01G	239	584	High
Well #3	2277001-03G	233	572	High
Well #4	2277001-04G	234	572	High

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

The facility is served by three bedrock wells. Well #1 has a Zone I of 239 feet and an Interim Wellhead Protection Area (IWPA) of 584. Well #3 has a Zone I of 233 feet and an IWPA of 572 feet; Well #4 has a Zone I of 234 feet and an IWPA of 572 feet. The public water system for the facility also includes well 2277001-02G, an emergency well that is not covered by this report. The wells are located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. Please refer to the attached map of the Zone I and IWPA. The wells serving the facility have no treatment at this time. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1.

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.
Key issues include:

1. **Inappropriate Activities in Zone Is;**
2. **Storage and use of hazardous materials;**
3. **An Aboveground Storage Tanks (AST) With Heating Oil; and**
4. **Storm drain.**

The overall ranking of susceptibility to contamination for the wells is High, based on the presence of low to moderate threat land use or activity in the IWPA, as seen in Table 2.

1. **Zone Is –** Currently, the wells do not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The facility's Zone Is contain buildings, access roads and parking areas. The public water supplier owns and controls all land encompassed by the Zone Is except approximately 2% of the land within Well #4 Zone I. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

   Recommendations:

✓ Remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
✓ Do not use road salt within the Zone I.
✓ Use BMPs for the storage, use, and disposal of hazardous materials, especially within a Zone I.

2. **Storage and use of hazardous material –** Being a research laboratory, chemicals for the experiments are stored and used on-site. Hazardous waste generated with the use of the chemicals is hauled away periodically by a licensed hauler.

   Recommendations:

✓ Use BMPs to ensure the proper handling and storage of solvents and other hazardous materials.
✓ If there aren't spill kits on site, purchase kits and train staff on their use to contain any leaks or spills.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Storage and use of hazardous materials	All Wells	All Wells	High	Use Best Management Practices for storage, use, and disposal of hazardous materials
Parking lot, driveways & roads	All Wells	All Wells	Moderate	Limit road salt usage and provide drainage away from wells
Fuel Storage Above Ground	Well #1	All Wells	Moderate	Tanks are double walled, should be on an impervious surface
Sewer pipeline	All Wells	All Wells	Moderate	Hooked up to City of Marlboro's sewer
Research Laboratory	Well #1 & #3	Well #1 & #3	Moderate	Facility is used as primate research facility
Storm water drains	All Wells	All Wells	Low	Total of six surface water drains

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

3. **Aboveground Storage Tank (AST) –** There are several 500 gallon ASTs with fuel oil in the protection radii of the water supply. The ASTs are double walled. If managed improperly, Aboveground Storage Tanks can be a potential contaminant source due to leaks or spills of the chemicals they store.
   Recommendations:
- ✓ Aboveground storage tanks in your IWPA should be located on an impermeable surface, and also contained in an area large enough to hold 110% of the liquid volume, should a spill occur.
- ✓ Upgrade the AST to incorporate proper containment and safety practices. Any modifications to the AST must be accomplished in a manner consistent with Massachusetts's plumbing, building, and fire code requirements. Consult with the local fire department for any additional local code requirements regarding ASTs.

4. **Storm Water Catch Basin –** Catch basins transport storm water from the roadway and adjacent properties to the ground. As flowing storm water travels, it picks up debris and contaminants from streets, parking areas and lawns. Common potential contaminants include lawn chemicals, pet waste, leakage from dumpsters, household hazardous waste, and contaminants from vehicle leaks, maintenance, washing or accidents.
   Recommendation:
- ✓ Work with the Town to have to the catch basins inspected, maintained, and cleaned on a regular schedule. Additionally, street and parking lot sweeping reduces the amount of potential contaminants in storm runoff.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the wells' susceptibility to contamination. New England Primate Research Center should review and adopt the key recommendations above and the following:

Zone I:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ Prohibit public access to the well and pumphouse by locking facilities, gating roads, and posting signs.
- ✓ Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of vandalism, check any above ground tanks for leaks, etc.
- ✓ If it's not feasible to purchase privately owned land within the Zone I at this time, consider a conservation restriction that would prohibit potentially threatening activities or a right of first refusal to purchase the property.

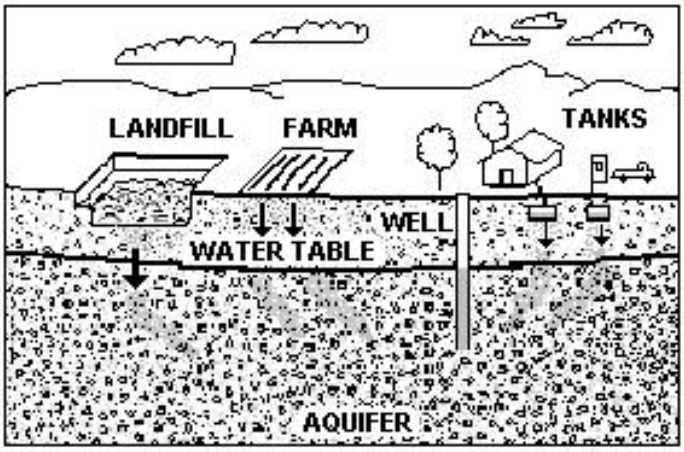

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Training and Education

- ✓ Post drinking water protection area signs at key visibility locations.
- ✓ Work with your community to ensure that stormwater runoff is directed away from the well and is treated according to DEP guidance.

For More Information:

Contact Josephine Yemoh-Ndi in DEP's Worcester Office at (508) 792-7650 x 5030 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier and town boards.

Facilities Management:

- ✓ Implement standard operating procedures regarding proper storage and use of hazardous materials. To learn more, see the hazardous materials guidance manual at www.state.ma.us/dep/brp/dws/dwspubs.html

Planning:

- ✓ Work with local officials in Southboro and Marlboro to include the facility IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area
- Recommended Source Protection Measures Factsheet
- Your Septic System Brochure